CLAIMS:

What is claimed is:

1. A process for recovering methanol, ethanol and/or dimethyl ether from a C_3+ hydrocarbon stream, the process comprising the step of:
passing the C_3+ hydrocarbon stream comprising C_3+ hydrocarbons, methanol, ethanol and/or dimethyl ether through an adsorbent bed comprising a non-acidic, 8-membered ring crystalline microporous material with no extra-framework charge balancing cations, wherein the crystalline microporous material preferentially adsorbs methanol, ethanol and/or dimethyl ether over C_3+ hydrocarbons to reduce the concentration of methanol, ethanol and/or dimethyl ether in the C_3+ hydrocarbon stream.

2. The process of claim 1, further comprising the step of:
desorbing the methanol, ethanol and/or dimethyl ether from the adsorbent bed.

3. The process of claim 2, wherein the step of passing is in a kinetic-based pressure and/or temperature swing adsorption process.

4. The process of claim 3, wherein the crystalline microporous material preferentially adsorbs methanol, ethanol and/or dimethyl ether within an adsorption time of about 120 seconds or less.

5. The process of claim 4, wherein the adsorption time is about 90 seconds or less.

6. The process of claim 4, wherein the adsorption time is about 60 seconds or less.

7. The process of claim 1, wherein the step of passing occurs within a temperature ranging from about 273K to about 523K.

8. The process of claim 1, wherein the step of passing occurs within a pressure ranging from about 100 kPa to about 2000 kPa.

9. The process of claim 1, wherein the C3+ hydrocarbon stream is in a vapor phase.

10. The process of claim 1, wherein the C3+ hydrocarbon stream comprises propane.

11. The process of claim 1, wherein the C3+ hydrocarbon stream comprises C4+ hydrocarbons.

12. The process of claim 1, wherein the C3+ hydrocarbon stream comprises dimethyl ether.

13. The process of claim 1, wherein the crystalline microporous material has a system of three interconnecting 8-membered ring channels.

14. The process of claim 1, wherein the crystalline microporous material contains framework silicon.

15. The process of claim 14, wherein the crystalline microporous material is Si-CHA.

16. The process of claim14, wherein the crystalline microporous material is DDR.

17. The process of claim 14, wherein the crystalline microporous material is ITE.

18. The process of claim 1, wherein the crystalline microporous material contains framework phosphorus.

19. The process of claim 18, wherein the crystalline microporous materials are selected from a group consisting of AlPO-34, AlPO-18, GaPO-34 and GaPO-18.

20. The process of claim 18, wherein the crystalline microporous material is AlPO-34.

21. The process of claim 18, wherein the crystalline microporous material is AlPO-18.

22. The process of claim 18, wherein the crystalline microporous material is GaPO-34.

23. The process of claim 18, wherein the crystalline microporous material is GaPO-18.

24. A process for producing polypropylene comprising the steps of:
producing a propylene stream from the C3+ hydrocarbon stream in claim 1; and
polymerizing a propylene stream to produce polypropylene.

25. A process for making a propylene stream and a propane stream from an oxygenate feed stream comprising the steps of:
(a) contacting an oxygenate feed stream with a molecular sieve catalyst under conditions sufficient to make a first stream, the first stream comprises, propylene, propane and dimethyl ether;
(b) separating at least a majority of propane in the first stream from propylene in the first stream to form a propylene product stream; and

(c) adsorbing dimethyl ether from propane with a crystalline microporous material that preferentially adsorbs dimethyl ether over propane to form a propane stream.

26. The process of claim 25, further comprising the step of desorbing the dimethyl ether from the adsorbent bed.

27. The process of claim 26, wherein the steps of adsorbing and desorbing are in a kinetic-based pressure and/or temperature swing adsorption process.

28. The process of claim 27, wherein the crystalline microporous material preferentially adsorbs dimethyl ether within an adsorption time of about 120 seconds or less.

29. The process of claim 28, wherein the adsorption time is about 90 seconds or less.

30. The process of claim 28, wherein the adsorption time is about 60 seconds or less.

31. The process of claim 25, wherein the step of (c) adsorbing occurs within a temperature ranging from about 273K to about 523K.

32. The process of claim 25, wherein the step (c) of adsorbing occurs within a pressure ranging from about 100 kPa to about 2000 kPa.

33. The process of claim 25, wherein the first stream is in a vapor phase during the step (c) of adsorbing.

34. The process of claim 25, wherein the first stream further comprises C4+ hydrocarbons.

35. The process of claim 25, wherein the crystalline microporous material has a system of three interconnecting 8-membered ring channels.

36. The process of claim 25, wherein the first stream comprises methanol during the step (b) of separating.

37. The process of claim 36, wherein the first stream comprises water during the step (b) of separating.

38. A process for producing polypropylene comprising polymerizing the propylene product stream produced in claim 25 to produce polypropylene.

39. A separation process for producing a dimethyl ether and/or methanol stream from a first stream, the first stream comprising propane, dimethyl ether and/or methanol, the process comprising the steps of:

(a) passing the first stream through an adsorbent bed having a non-acidic, 8-membered ring crystalline microporous material with no extra framework charge balancing cations, wherein the crystalline microporous material preferentially adsorbs dimethyl ether and/or methanol over propane; and

(b) desorbing the dimethyl ether and/or methanol to produce the dimethyl ether and/or methanol stream.

40. The process of claim 39, wherein the step (a) of passing is in a kinetic-based pressure and/or temperature swing adsorption process.

41. The process of claim 40, wherein the crystalline microporous material preferentially adsorbs dimethyl ether and/or methanol within an adsorption time of about 120 seconds or less.

42. The process of claim 41, wherein the adsorption time is about 90 seconds or less.

43. The process of claim 41, wherein the adsorption time is about 60 seconds or less.

44. The process of claim 39, wherein the step of (a) passing occurs within a temperature ranging from about 273K to about 523K.

45. The process of claim 39, wherein the step of (a) passing occurs within a pressure ranging from about 100 kPa to about 2000 kPa.

46. The process of claim 39, wherein the first stream is in a vapor phase.

47. The process of claim 39, wherein the C3+ hydrocarbon stream comprises C4+ hydrocarbons.

48. The process of claim 39, wherein the crystalline microporous material has a system of three interconnecting 8-membered ring channels.

49. The process of claim 39, wherein the crystalline microporous material contains framework silicon.

50. The process of claim 49, wherein the crystalline microporous material is Si-CHA.

51. The process of claim 49, wherein the crystalline microporous material is DDR.

52. The process of claim 49, wherein the crystalline microporous material is ITE.

53. The process of claim 39, wherein the crystalline microporous material contains framework phosphorus.

54. The process of claim 53, wherein the crystalline microporous materials are selected from the group consisting of AlPO-34, AlPO-18, GaPO-34 and GaPO-18.

55. The process of claim 53, wherein the crystalline microporous material is AlPO-34.

56. The process of claim 53, wherein the crystalline microporous material is AlPO-18.

57. The process of claim 53, wherein the crystalline microporous material is GaPO-34.

58. The process of claim 53, wherein the crystalline microporous material is GaPO-18.

59. A process for recovering methanol, ethanol and/or dimethyl ether from a C3+ hydrocarbon stream, the process comprising the step of:
passing the C3+ hydrocarbon stream comprising C3+ hydrocarbons, methanol, ethanol and/or dimethyl ether through an adsorbent bed comprising a crystalline microporous material having a chabazite-type framework and having a composition involving a molar relationship defined as follows:

$$X_2O_3{:}(n)YO_2,$$

wherein X is a trivalent element, Y is a tetravalent element and n is greater than 100.

60. The process of claim 59, wherein n is greater than 200.

61. The process of claim 59, wherein n is greater than 500.

62. The process of claim 59, wherein n is greater than 1000.

63. The process of claim 59, wherein X is selected from a group consisting of aluminum, boron, iron, indium, and/or gallium and wherein Y is selected from a group consisting of silicon, tin, titanium and/or germanium.

64. The process of claim 59, wherein X includes aluminum and Y includes silicon.

65. The process of claim 59, further comprising the step of:
desorbing the methanol, ethanol and/or dimethyl ether from the adsorbent bed.

66. The process of claim 65, wherein the step of passing is a kinetic-based pressure and/or temperature swing adsorption process.

67. The process of claim 66, wherein the crystalline microporous material preferentially adsorbs methanol, ethanol and/or dimethyl ether within an adsorption time of about 120 seconds or less.

68. The process of claim 67, wherein the adsorption time is about 90 seconds or less.

69. The process of claim 67, wherein the adsorption time is about 60 seconds or less.

70. The process of claim 67, wherein the step of passing occurs within a temperature ranging from about 273K to about 523K.

71. The process of claim 59, wherein the step of passing occurs within a pressure ranging from about 100 kPa to about 2000 kPa.

72. The process of claim 59, wherein the C3+ hydrocarbon stream is in a vapor phase.

73. The process of claim 59, wherein the C3+ hydrocarbon stream comprises propane.

74. The process of claim 59, wherein the C3+ hydrocarbon stream comprises C4+ hydrocarbons.

75. The process of claim 59, wherein the C3+ hydrocarbon stream comprises dimethyl ether.